

# NATIONAL PHYSICAL LABORATORY

## METROLOGY CENTRE

Ref: **MOY/SCMI/83**                      **SPECIFICATION OF ACCURACY**  
**(Issue 5)**

**for**

### **A GLASS PRECISION POLYGON**

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Type :                      A glass precision polygon in a metal mount which is provided with a lapped annular base. The peripheral faces of the polygon are suitably coated to ensure adequate reflectivity.

Note: - This polygon is one of a series of regular polygons having reflecting faces varying from 5 to 35 in number.

Made by:                      Rank Precision Industries Ltd.  
Metrology Division.

LIMITING VALUE OR  
MAXIMUM  
PERMISSIBLE ERROR

#### 1. GENERAL

1.1                      The workmanship and finish shall be in keeping with precision standards of this class.

1.2                      The mount shall be marked: -  
(i)                      with an identification number.  
(ii)                      with the maker's name or trade mark.  
(iii)                      a.                      If the exterior angle of the polygon \* contains an exact number of degrees, the cumulative angular values shall be engraved on the mount adjacent to the reflecting faces, the datum face being 0°.

\*                      The acute angle between the normals to adjacent reflecting faces.

b.                      Otherwise, the successive reflecting faces shall be identified by numbering them on the mount adjacent to the reflecting face serially from 1 upwards; the nominal value of the exterior angle shall also be marked on the mount in a suitable position.

1.3                      The polygon shall be supplied in a suitable protective case for storage purposes.

#### 2. FLATNESS AND SQUARENESS OF WORKING FACES

2.1                      The lapped annular base of the mount shall be flat.                      0.0015 mm (0.000 06 in.)

Note:                      Any general departure from flatness must be of a concave nature.

2.2                      The exposed portion of each reflecting face shall have a minimum diameter of 15 mm and shall be flat.                      ¼ fringe.

LIMITING VALUE OR  
MAXIMUM  
PERMISSIBLE ERROR

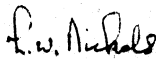
2.3 Each reflecting face shall be square to the lapped annular base 30 seconds of arc.

3. ANGULAR ACCURACY

3.1 When measured in a plane parallel with the lapped annular base of the mount: -

(a) The angle between any reflecting face and the datum face shall agree with its nominal value 5 seconds of arc.

(b) The angle between any two adjacent reflecting faces shall agree with its nominal value 5 seconds of arc.

 (Signed)

for Director

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